

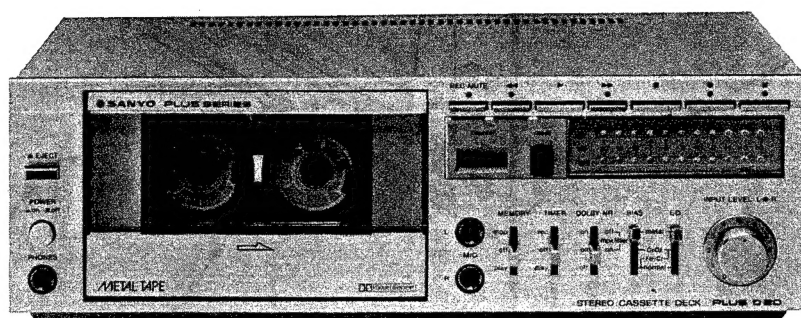
SERVICE MANUAL

CASSETTE TAPE DECK



PLUS D20

(EUROPE)



SPECIFICATIONS

Tape	Metal, CrO ₂ , FeCr, Low noise and standard tape
Recording system	AC bias, 4-track stereo
Erasing system	AC erasing, 2-track
Tape speed	4.75 cm/sec. (1-7/8 i.p.s.)
Recording time	60 min. (C-60)
Rewind and fast forward time	100 sec. (C-60)
Wow and flutter	0.1% WRMS
Frequency response	30 - 18,000 Hz (metal) 30 - 17,000 Hz (CrO ₂) 30 - 17,000 Hz (FeCr) 30 - 12,500 Hz (normal)
Signal to noise ratio	67 dB (Dolby NR on, CrO ₂ tape) 59 dB (Dolby NR off, CrO ₂ tape)
Input	MIC: 400 ohms to 10K ohms (0.3 mV) LINE IN: 50K ohms (50 mV)
Output	LINE OUT: 3K ohms (0.41 V) PHONES: 8 ohms to 10K ohms
Power source	AC: 220 V, 50 Hz
Power consumption	29 W
Dimensions (Approx.)	298 (W) x 230 (D) x 88 (H) mm (11-3/4" x 9-1/16" x 3-1/2")
Weight (Approx.)	5 kg (11 lbs.)

* Specifications subject to change without notice.

WM-5498

ADJUSTMENT OF MECHANISM

1. HEAD AZIMUTH

DOLBY NR SW : OFF

BIAS SW : NORMAL

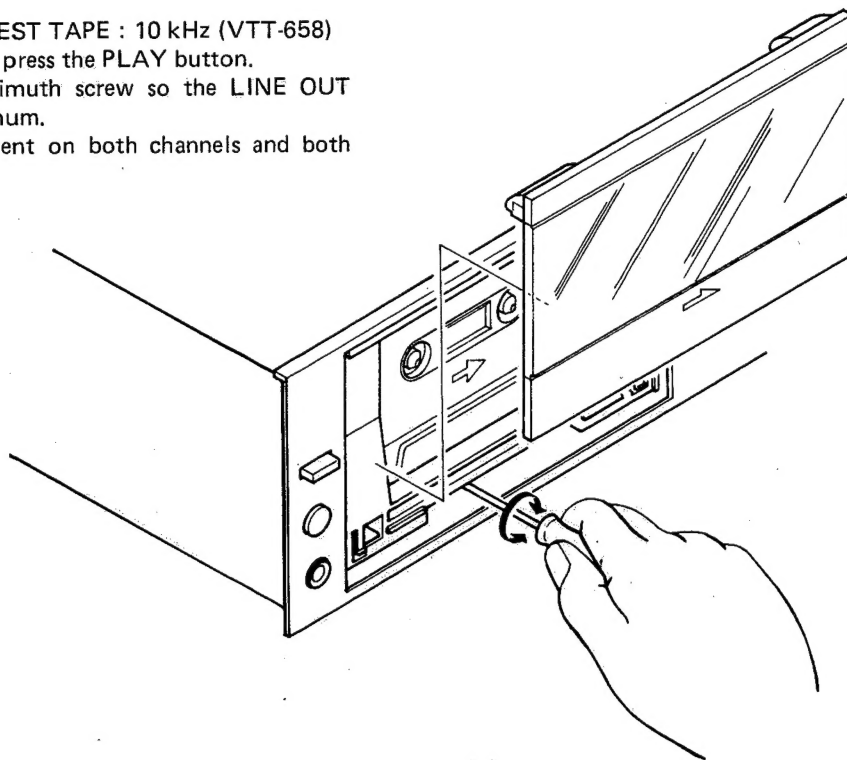
EQ SW : NORMAL

HEAD AZIMUTH TEST TAPE : 10 kHz (VTT-658)

Load a test tape and press the PLAY button.

Adjust the head azimuth screw so the LINE OUT level becomes maximum.

Repeat the adjustment on both channels and both sides of the tape.



2. MEASUREMENT OF TORQUE TENSION (Fig. 1)

- Before measurement, make sure all parts are normally working by checking visually. Especially, make sure the pinch roller is clean.
- Set the torque meter as shown on the mechanism. Each item of measurement can be checked at a glance.
- Connect a tension gauge to the tape as shown, and tie the other end to the reel hub. Then measure.

Cassette torque meter

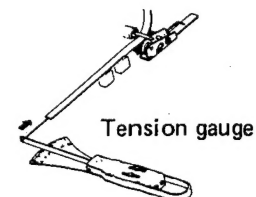
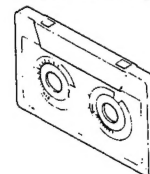


Fig. 1

Item	Take-up torque	Back tension	Pinch pressure
Gauge-used	Cassette torque meter	Cassette torque meter	Tension gauge,
Play	35 — 60 gr-cm	1.5 — 6 gr-cm	350 ±50 gr.
Fast-forwarding	70 — 130 gr-cm	1.5 — 6 gr-cm	
Rewinding	70 — 130 gr-cm	1.5 — 6 gr-cm	

3. ADJUSTMENT OF TAPE SPEED (MOTOR SPEED)

- Connect counter to playback output terminal (provided at the back of the set), and load with test tape (MTT-111). Play back.
- Turn semifixed variable resistor for adjusting tape speed by using a screwdriver (about 2 mm wide) as shown in the sketch until the counter reads within 2980 to 3000 Hz. (Fig. 2)

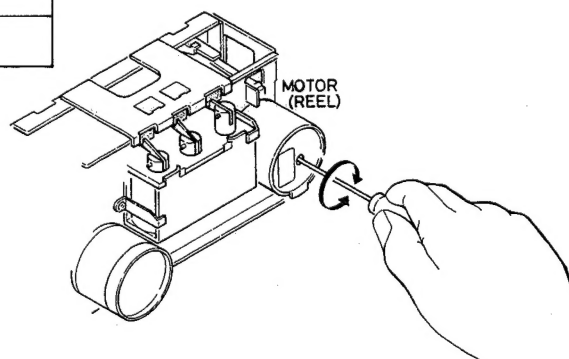


Fig. 2

ADJUSTMENT OF AMPLIFIER

1. PLAYBACK OUTPUT

DOLBY NR SW : OFF

BIAS SW : NORMAL

EQ SW : NORMAL

DOLBY LEVEL CALIBRATION TONE TEST TAPE : (MTT-150)

Lead a test tape and press the PLAY button.

Adjust the SVR701(L-ch) and SVR801(R-ch) so the LINE OUT level indicates 0.58V on each channel.

2. ADJUSTMENT OF LED DISPLAY LEVEL METER

DOLBY NR SW : OFF

BIAS SW : NORMAL

EQ SW : NORMAL

DOLBY LEVEL CALIBRATION TONE TEST TAPE : (MTT-150)

(1) Lead a test tape and press the PLAY Button.

Set the SVR704 and SVR804 near the middle position and then adjust SVR703(L-ch) and SVR803(R-ch) so the both LED display meters respectively indicate +3 dB.

ALIGNMENT TEST TAPE : (AC-212)

(2) Insert the blank tape into the tape deck.

Apply an input signal of -24 dB (1 kHz) to the unit with the audio oscillator.

Make the RECORD and turn the record level control knob so that the OVU.

Reduce the input level to -44 dB (1 kHz) and adjust the SVR704(L-ch) and SVR804(R-ch) so that the level indicator light up at -20VU.

3. RECORD/PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

DOLBY SW : OFF

BIAS SW : NORMAL

EQ SW : NORMAL

ALIGNMENT TEST TAPE (AC-212)

Reduce the input signal to -44 dB (1 kHz, 10 kHz) and record both signal 1 kHz and 10 kHz at same level, and then play back them.

Taking the playback output of 1 kHz as 0 dB, adjust the SVR705(L-ch) and SVR805(R-ch) until the playback output of 10 kHz becomes ± 0 dB to +0.5 dB.

4. RECORD/PLAYBACK output ADJUSTMENT

DOLBY NR SW : OFF

BIAS SW : NORMAL

EQ SW : NORMAL

ALIGNMENT TEST TAPE : (AC-212)

Set INPUT LEVEL control knob to the same position as item 2-(2) and the input signal level at -24 dB (1 kHz).

Record 1 kHz signal and play it back.

Adjust SVR702(L-ch) and SVR802(R-ch) so the playback output level indicates 0.41V on each channel.

5. DOLBY EFFECT

DOLBY NR SW : OFF

BIAS SW : NORMAL

EQ SW : NORMAL

ALIGNMENT TEST TAPE : (AC-212)

(1) Set the unit to the RECORD mode, and input signal at -21 dB (1 kHz).

Adjust the INPUT LEVEL control knobs so the LINE OUT level indicates 0.58V on each channel.

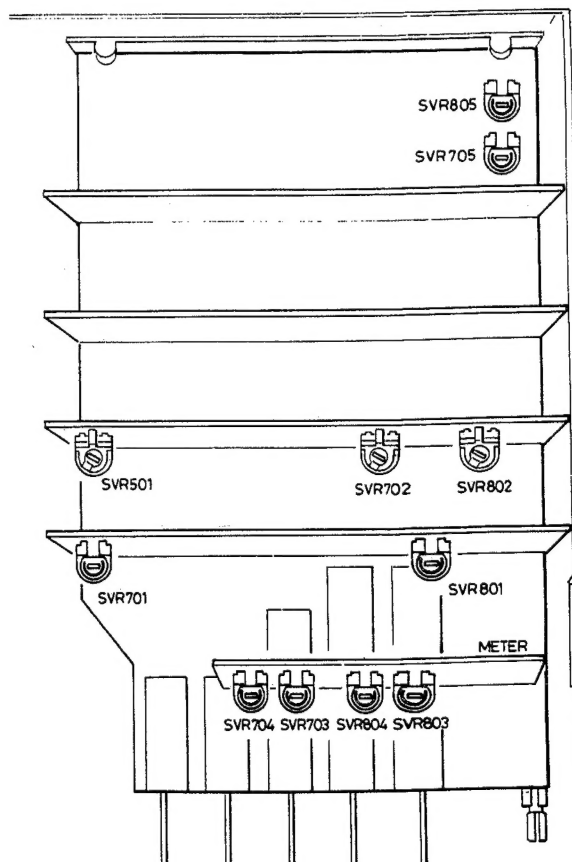
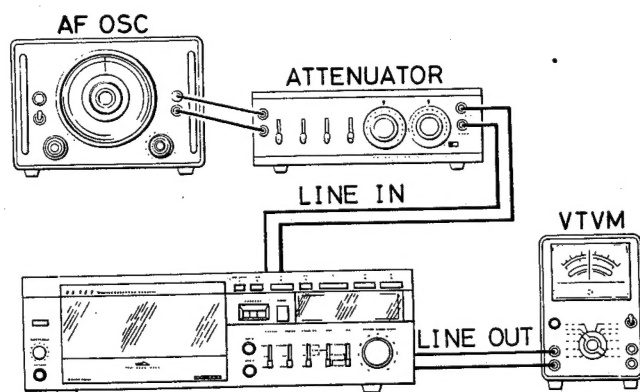
(2) Connect VTVM to the measuring points for SVR702 and SVR802.

(3) Set the input signal at -41 dB (2 kHz).

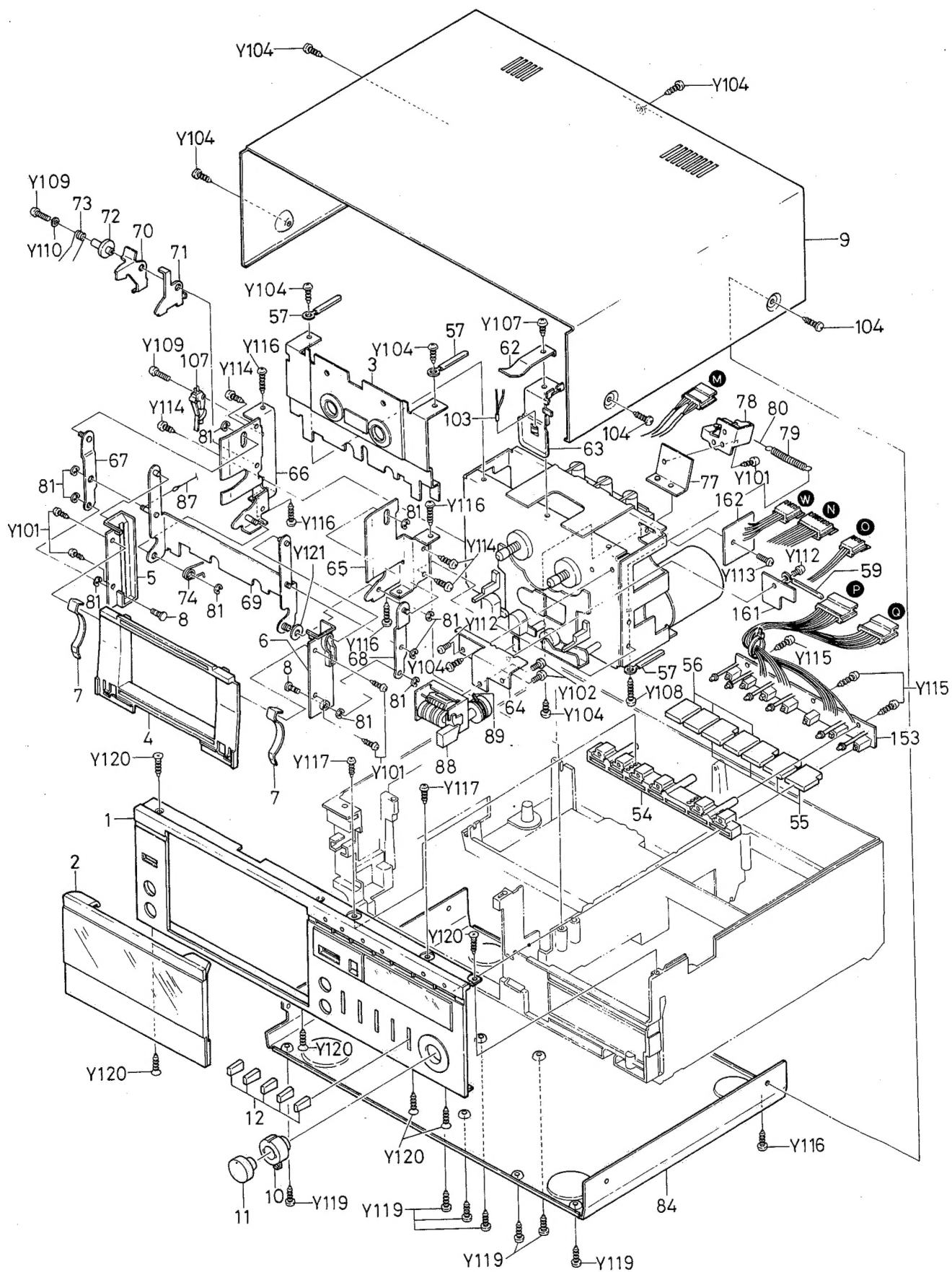
Adjust the SVR501 so the variation of setting the DOLBY NR SW : ON position from OFF position becomes +4.3 dB (with OFF position as 0 dB* reference).

*0 dB = input signal -41 dB, 2 kHz & DOLBY NR SW : OFF

4.3 dB = input signal -41 dB, 2 kHz & DOLBY NR SW : ON



CABINET EXPLODED VIEW



PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141-6-133T-18400	Individual Carton	1
	141-6-144T-63700	Foam Plastic Case	2
	141-6-231T-40500	Inner Poly Cover, Set	1
	141-6-231T-25300	Inner Poly Cover, Inst. M	1
	141-6-231T-10300	Inner Poly Cover, AC Cord	1
ACCESSORY			
	141-6-410T-35100	Instruction Book	1
	4-243T-13302	Lead Cord	1
CABINET			
1	141-0-122T-37700	Front Panel Ass'y	1
2	141-0-124T-29700	Top Lid Ass'y	1
3	141-0-153T-60630	Escutcheon Ass'y	1
4	141-2-224T-10930	Bracket, Lid	1
5	141-2-210T-22700	Bracket	1
6	141-2-210T-22800	Bracket	1
7	141-2-853T-68200	Spring Plate	2
8	141-2-462T-63500	Boss	2
9	141-2-111T-46700	Cabinet	1
10	141-0-163T-74700	Rotary Knob Ass'y, Left VR	1
11	141-0-163T-74800	Rotary Knob Ass'y, Right VR	1
12	141-2-156T-27700	Knob, Lever	5
CHASSIS			
51	141-2-310T-41300	Bracket, Switch	1
52	141-2-368T-20200	Heat Sink	1
53	141-2-210T-27000	Bracket, Meter	1
54	141-2-210T-26900	Bracket, Meter	1
55	141-2-161T-85900	Push Button, Play, Stop Rec. Pause	4
56	141-2-161T-86000	Push Button, Rec. Mute, Rew, F. Fwd	3
57	141-2-472T-01201	Lug Lead Mtg.	3
58	141-2-310T-41400	Bracket, Power Switch	1
59	141-2-472T-01001	Lug, Lead Mtg.	1
60	141-2-322T-62300	Shield Plate, Mic	1
61	141-2-210T-27100	Bracket, Jack	1
62	141-2-853T-69600	Spring Plate	1
63	141-2-374T-15100	Bracket P L	1
64	141-2-310T-41000	Bracket, Connector	1
65	141-2-310T-41200	Bracket, Eject Right	1
66	141-0-310T-41100	Bracket Ass'y, Eject Left	1
67	141-0-742T-53700	Lever Ass'y	1
68	141-0-742T-53800	Lever Ass'y	1
69	141-0-742T-53930	Lever Ass'y	1
70	141-2-742T-53600	Lever	1
71	141-2-742T-53500	Lever, Eject Switch	1
72	141-2-462T-64000	Boss	1
73	141-2-855T-61200	Spring Coil	1
74	141-2-855T-61300	Spring Coil	1
75	141-0-253T-22201	Joint Ass'y	1
76	141-2-852T-65900	Spring Wire	1
77	141-2-310T-41500	Bracket	1
78	141-2-581T-17300	Gear	1
79	141-2-855T-50100	Spring Coil	1
80	141-2-340T-03000	Rope	1
81	141-2-457T-23100	Special Washer	7
82	141-0-253T-23900	Joint Ass'y	1
83	141-2-253T-24000	Joint	1
84	141-0-125T-20930	Bottom Lid Ass'y	1
85	141-0-311T-35330	Chassis Ass'y	1
86	141-2-464T-14400	Fixer	1
87	141-2-852T-65800	Spring Wire	1
88	141-0-811T-08300	Counter Ass'y	1
89	141-2-564T-23400	Square Belt, Counter	1
	141-2-447T-03900	Cushion	2

Key No.	Part No.	Description	Q'ty
HARDWARE			
Y101		Pan Hd. Tapping Screw 2.6x6	5
Y102		Pan Hd. Screw 3x4	2
Y103		Pan Hd. Screw 3x6	9
Y104		Binding Hd. Tapping Screw 3x6	15
Y105		Pan Hd. Screw 3x8	3
Y106		Hexagon Nut 3mm	3
Y107		Pan Hd. Forming Screw 3x40	1
Y108		Pan Hd. Tapping Screw 3x12	1
Y109		Pan Hd. Screw 2x10	2
Y110		Washer 2.6x5x0.5t	1
Y112		Pan Hd. Screw 2.6x6	2
Y113		Pan Hd. Screw 2x6	1
Y114		Pan Hd. Forming Screw 3x6	4
Y115		Pan Hd. Tapping Screw 2.3x8	3
Y116		Binding Hd. Tapping Screw 3x10	10
Y117		Pan Hd. Tapping Screw 2.3x6	3
Y118		Binding Hd. Tapping Screw 4x10	3
Y119		Binding Hd. Tapping Screw 3x8	8
Y120		Flat Hd. Tapping Screw 3x8	6
Y121		Washer 4x10x0.8t	1
ELECTRICAL PARTS			
101	4-300T-19171	Power Trans	1
102	4-243T-77172	Power Cord	1
103	4-612T-11182	Lamp	1
104	4-240T-02900	Socket 3P	1
105	4-235T-44871	Socket, Headphone	1
106	4-235T-44971	Socket, Mic	2
107	4-231T-84200	Switch, Eject	1
108	4-231T-95600	Socket	1
109	4-231T-95700	Socket	1
MECHANISM CONTROL PCB ASS'Y			
151	141-4-233T-59701	P.C Board Ass'y, Mechanism Control	1
IC406		IC TC4001BP	1
IC402		IC TC4011BP	2
405			
IC403		IC TC4069UBP	2
404			
IC401		IC AN6251 DIP24	1
Q401,402		Transistor 2SC536	3
403			
D401,402		Diode DS442X	17
403,404			
406,407			
408,409			
410,411			
412,413			
414,415			
416,420			
421			
CN403	4-236T-10271	Plug, 3P-25P	1
CN402	4-236T-16574	Plug, 7P	1
CN401	4-236T-16575	Plug, 8P	1
	4-235T-38798	Socket, 11P	1
RA-1	4-221T-04300	Resistor	1
CAPACITORS			
C416,417		AL Electrolytic 0.47μF 10V ±20%	3
418			
C411		AL Electrolytic 1μF 10V ±20%	1
C405,406		Electrolytic 0.47μF 25V	4
407,412			
C403,408		Electrolytic 1μF 25V	2
C415		Electrolytic 4.7μF 25V	1
C414		Electrolytic 10μF 10V	1
C419		Electrolytic 47μF 10V	1
C401		Electrolytic 220μF 10V	1
C413		BC Con 0.022μF 25V ±20%	1

PARTS LIST

Key No.	Part No.	Description	Q'ty
MECHANISM CONTROL PCB ASS'Y			
	CAPACITORS		
C402,404 410,420 441		Ceramic 0.022 μ F 50V +80-20%	5
	RESISTORS		
R401		Carbon 220K ohm \pm 5% $\frac{1}{4}$ W	1
R402		Carbon 56K ohm \pm 5% $\frac{1}{4}$ W	1
R403,405		Carbon 330K ohm \pm 5% $\frac{1}{4}$ W	2
R404,406 407		Carbon 5.6K ohm \pm 5% $\frac{1}{4}$ W	3
R408		Carbon 270K ohm \pm 5% $\frac{1}{4}$ W	1
R409		Carbon 120K ohm \pm 5% $\frac{1}{4}$ W	1
R411,414 417,418		Carbon 4.7K ohm \pm 5% $\frac{1}{4}$ W	4
R421,422		Carbon 150 ohm \pm 5% $\frac{1}{4}$ W	2
R423		Carbon 270 ohm \pm 5% $\frac{1}{4}$ W	1
R424,425 426		Carbon 150 ohm \pm 5% $\frac{1}{4}$ W	3
R427		Carbon 15K ohm \pm 5% $\frac{1}{4}$ W	1
R428		Carbon 220 ohm \pm 5% $\frac{1}{4}$ W	1
R429,432		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	2
R430,433		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	2
R431		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	1
R434		Carbon 150K ohm \pm 5% $\frac{1}{4}$ W	1
R416		Carbon 1.8M ohm \pm 5% $\frac{1}{4}$ W	1
R419		Carbon 1.2M ohm \pm 5% $\frac{1}{4}$ W	1
R435		Carbon 1.5K ohm \pm 5% $\frac{1}{4}$ W	1
R436		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	1
R437,438 439,441		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	4
R442,445 447		Carbon 5.6K ohm \pm 5% $\frac{1}{4}$ W	3
R443		Carbon 68K ohm \pm 5% $\frac{1}{4}$ W	1
R446		Carbon 470K ohm \pm 5% $\frac{1}{4}$ W	1
R448		Carbon 150K ohm \pm 5% $\frac{1}{4}$ W	1
R449		Carbon 330K ohm \pm 5% $\frac{1}{4}$ W	1
MECHANISM DRIVER PCB ASS'Y			
152	141-4-233T-59800	P.C Board Ass'y, Mechanism Driver	1
Q421		Transistor 2SA608	1
Q419,420 422,423 424		Transistor 2SC536	5
Q405,406 407,412 413,414		Transistor 2SC536K	6
Q415		Transistor 2SB560	1
Q410		Transistor 2SD438	1
Q411		Transistor 2SB631	1
Q408,409		Transistor 2SD600	2
Q425		Transistor 2SD612	1
Q418		Transistor 2SD734	1
Q416,417		Transistor 2SC536	2
D431,432 433,436 437		Diode DS442X	5
D438,439 440,441		Diode DS442X	4
D434,435 D442		Diode DS135E	2
CNP404	4-236T-10200	Zener Diode GZA6.2 μ	1
CNP405	4-236T-10273	Plug	1
CNP406	4-236T-10274	Plug, 6P	1
		Plug 3P-25P	1
	CAPACITORS		
C429		Electrolytic 2.2 μ F 25V	1
C432		Electrolytic 4.7 μ F 25V	1
C422,423 421		Electrolytic 10 μ F 10V	3
C435,436 437		Electrolytic 22 μ F 10V	3
C424		Electrolytic 47 μ F 16V	1
C428		Electrolytic 100 μ F 10V	1
C431		Electrolytic 330 μ F 6.3V	1
C434		Electrolytic 220 μ F 25V	1
C425		Electrolytic 100 μ F 16V	1

Key No.	Part No.	Description	Q'ty
MECHANISM DRIVER PCB ASS'Y			
	CAPACITORS		
C427		Ceramic 0.022 μ F 50V +80-20%	1
C426		Ceramic 0.022 μ F 50V +80-20%	1
C430		BC Con 0.047 μ F 25V \pm 20%	1
	RESISTORS		
R451,453		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	2
R452,454		Carbon 22K ohm \pm 5% $\frac{1}{4}$ W	2
R455		Carbon 1.2K ohm \pm 5% $\frac{1}{4}$ W	1
R456		Carbon 56K ohm \pm 5% $\frac{1}{4}$ W	1
R457,459		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	2
R458,461		Carbon 18K ohm \pm 5% $\frac{1}{4}$ W	2
R462		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	1
R463		Carbon 22K ohm \pm 5% $\frac{1}{4}$ W	1
R464		Carbon 1.2K ohm \pm 5% $\frac{1}{4}$ W	1
R465		Carbon 56K ohm \pm 5% $\frac{1}{4}$ W	1
R466		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	1
R467		Carbon 18K ohm \pm 5% $\frac{1}{4}$ W	1
R468		Carbon 33K ohm \pm 5% $\frac{1}{4}$ W	1
R469		Carbon 100 ohm \pm 5% $\frac{1}{4}$ W	1
R470		Carbon 22K ohm \pm 5% $\frac{1}{4}$ W	1
R471		Carbon 1K ohm \pm 5% $\frac{1}{4}$ W	1
R472		Carbon 1.2K ohm \pm 5% $\frac{1}{4}$ W	1
R477		Carbon 3.3K ohm \pm 5% $\frac{1}{4}$ W	1
R478		Carbon 22K ohm \pm 5% $\frac{1}{4}$ W	1
R479		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	1
R495		Carbon 18 ohm \pm 5% $\frac{1}{4}$ W	1
R474,475 476		Solid 180 ohm \pm 10% $\frac{1}{2}$ W	3
R480		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	1
R481		Carbon 330 ohm \pm 5% $\frac{1}{4}$ W	1
R482		Carbon 10 ohm \pm 5% $\frac{1}{4}$ W	1
R483		Carbon 820 ohm \pm 5% $\frac{1}{4}$ W	1
R484		Carbon 560 ohm \pm 5% $\frac{1}{4}$ W	1
R485		Carbon 82K ohm \pm 5% $\frac{1}{4}$ W	1
R486		Carbon 68K ohm \pm 5% $\frac{1}{4}$ W	1
R487		Carbon 100K ohm \pm 5% $\frac{1}{4}$ W	1
R489		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	1
R490		Carbon 10K ohm \pm 5% $\frac{1}{4}$ W	1
R491		Carbon 820K ohm \pm 5% $\frac{1}{4}$ W	1
R492		Carbon 22 ohm \pm 5% $\frac{1}{4}$ W	1
R493		Carbon 100 ohm \pm 5% $\frac{1}{4}$ W	1
R494		Carbon 470 ohm \pm 5% $\frac{1}{4}$ W	1
R496		Carbon 5.6K ohm \pm 5% $\frac{1}{4}$ W	1
SWITCH PCB ASS'Y			
153	141-4-233T-76800 4-238T-08800	P.C Board Ass'y, Switch Switch, REC MUTE/REW/ PLAY/F FWD/STOP/REC/ PAUSE	1 7
LED403 LED401 402,404 405,406		LED SLR34UR Red LED SLR34GG Green	1 5
	4-235T-92900 4-235T-93000	Socket 8P Socket 7P	1 1
AMP PCB ASS'Y			
154 S1,2 S3	141-4-233T-76900 4-238T-18800 4-238T-18900 4-238T-19000 4-222T-84271	P.C Board Ass'y, Amp Switch, EQ, Bias Switch, Dolby Switch, Memory, Timer Variable Resistor, Input Level	1 2 1 2 1
VR701 801 SVR705 805	4-222T-39578	Semifixed Variable Resistor	2
	4-258T-22800 4-255T-02371 4-253T-01019 4-253T-04500 4-238T-12500	O.S.C Coil MX Coil Hi Frequency Choke Coil Hi Frequency Choke Coil Push Switch, Beat Canal	1 2 2 2 1

PARTS LIST

Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
AMP PCB ASS'Y				AMP PCB ASS'Y			
S4	4-231T-42100	Switch, Input Select	1	RESISTORS			
	4-236T-10276	Plug 9P	1				
	4-236T-10278	Plug 11P	2				
	4-236T-10200	Plug 3P	2				
	4-236T-10282	Plug 15P	1				
	4-236T-10275	Plug 8P	1				
	4-235T-99300	Socket	1				
	4-236T-10271	Plug 4P	1				
	4-236T-10293	Plug 2P	1				
Q909		Transistor 2SC2320	1				
Q917,918		Transistor 2SC945	2				
Q706,806		Transistor 2SD545	2				
Q905,907		Transistor 2SA608	4	R753,853		Carbon 1M ohms ±5% ¼W	4
912,914				755,855			
Q906,908		Transistor 2SC536 AUD	6	R914,916		Carbon 47K ohm ±5% ¼W	4
910,911				919,921			
913,915				R915,924		Carbon 18K ohm ±5% ¼W	4
Q705,805		Transistor 2SD1012F	2	920,922			
D919		Zener Diode WZ120	1	R917		Carbon 220K ohm ±5% ¼W	1
D917,918		Diode DS442X	2	R918		Carbon 330 ohm ±5% ¼W	1
CAPACITORS				R923		Carbon 100K ohm ±5% ¼W	1
C717,817		Electrolytic 10µF 25V	3	R928		Carbon 2.2K ohm ±5% ¼W	1
910				R929,944		Carbon 1K ohm ±5% ¼W	2
C718,818		Electrolytic 2.2µF 25V	2	R931		Carbon 12K ohm ±5% ¼W	1
C720,820		Electrolytic 22µF 16V	2	R932		Carbon 12 ohm ±5% ¼W	1
C909		Electrolytic 1µF 25V	1	PRE MIC PCB ASS'Y			
C931		Electrolytic 47µF 10V	1	155	141-4-233T-60101	P.C. Board Ass'y, Pre, Mic	1
C723,823		BC Con 0.018µF 25V ±5%	2		141-2-322T-42000	Shield Plate	1
C721,821		BC Con 0.0068µF 25V ±10%	4		4-235T-38798	Socket 11P	1
735,835					4-235T-38795	Socket 8P	1
C722,822		BC Con 0.056µF 25V ±10%	2		4-236T-10293	Plug 2P	2
C724,824		BC Con 0.022µF 25V ±5%	2		4-236T-10273	Plug	1
C725,825		BC Con 0.018µF 25V ±5%	2	SVR701	4-222T-85876) or Semifixed Variable	2
C733,833		BC Con 0.0022µF 25V ±10%	2	801	4-222T-81576	Resistor 20K	2
C734,834		BC Con 0.01µF 25V ±10%	2	IC701,801		IC HA12005 DIP16	2
C912		BC Con 0.012µF 25V ±5%	1	Q701,801		Transistor 2SC945	2
C914,913		BC Con 0.0033µF 25V ±5%	2	Q704,804		Transistor 2SA1016	2
C911		BC Con 0.01µF 25V ±5%	1	Q702,802		Transistor 2SC2546	4
C926		BC Con 0.047µF 25V ±20%	1	703,803			
C730,830		Ceramic 220pF 50V ±10%	2	D915		Diode DS442X	1
C915		Mylar 0.0022µF 50V ±5%	1	CAPACITORS			
C929		Electrolytic 47µF 25V	1	C917,920		Electrolytic 100µF 16V	2
C927		Ceramic 0.001µF 50V ±10%	1	C919,922		Electrolytic 47µF 25V	2
C934		Ceramic 470pF 50V ±10%	1	C709,809		Electrolytic 22µF 10V	2
C930		Electrolytic 470µF 16V	1	C704,804		Electrolytic 100µF 10V	2
C932		Electrolytic 100µF 16V	1	C712,812		Electrolytic 33µF 16V	2
RESISTORS				C713,813		BC Con 0.033µF 25V ±5%	2
R702,802		Carbon 56K ohm ±5% ¼W	2	C716,816		BC Con 0.027µF 25V ±5%	2
R559		Carbon 1M ohm ±5% ¼W	1	C705,805		Electrolytic 1µF 50V	2
R943		Carbon 100K ohm ±5% ¼W	1	C701,801		Electrolytic 4.7µF 25V	2
R942		Carbon 100 ohm ±5% ¼W	1	C708,808		Electrolytic 1µF 25V	2
R509		Carbon 1M ohm ±5% ¼W	1	C707,807		Electrolytic 10µF 16V	2
R742,842		Carbon 5.6K ohm ±5% ¼W	2	C715,815		Electrolytic 10µF 16V	2
R743,843		Carbon 2.2K ohm ±5% ¼W	2	C710,810		Ceramic 680pF 50V ±10%	2
R744		Carbon 18K ohm ±5% ¼W	1	C702,802		Ceramic 470pF 50V ±10%	2
R844		Carbon 18K ohm ±5% ¼W	1	C736,836		Ceramic 220pF 50V ±10%	2
R758,858		Carbon 120 ohm ±5% ¼W	2	C703,803		Ceramic 0.001µF 50V ±10%	6
R756,856		Carbon 4.7K ohm ±5% ¼W	2	706,806			
R757,857		Carbon 10K ohm ±5% ¼W	2	711,811			
R736,836		Solid 390 ohm ±10% ¼W	2	C714,814		Ceramic 0.001µF 50V ±10%	2
R925		Solid 330 ohm ±10% ¼W	1	RESISTORS			
R926		Solid 270 ohm ±10% ¼W	1	R701,801		Carbon 6.8K ohm ±5% ¼W	2
R728,828		Carbon 2.2K ohm ±5% ¼W	2	R703,803		Carbon 100K ohm ±5% ¼W	4
R729,829		Carbon 4.7K ohm ±5% ¼W	4	712,812			
740,840				R704,804		Carbon 150K ohm ±5% ¼W	3
R730,830		Carbon 2.2K ohm ±5% ¼W	4	825			
754,854				R705,805		Carbon 8.2K ohm ±5% ¼W	4
R734,834		Carbon 120K ohm ±5% ¼W	2	707,807			
R737,837		Carbon 47 ohm ±5% ¼W	2	R706,806		Carbon 220 ohm ±5% ¼W	3
R738,838		Carbon 10K ohm ±5% ¼W	3	821			
930				R708,808		Carbon 68K ohm ±5% ¼W	2
R741,841		Carbon 3.9K ohm ±5% ¼W	2	R710,810		Carbon 1.8K ohm ±5% ¼W	5
R749,849		Carbon 1K ohm ±5% ¼W	2	823,824			
R750,850		Carbon 1M ohm ±5% ¼W	6	723			
751,851				R711,811		Carbon 10K ohm ±5% ¼W	3
752,852				820			
				R713,813		Carbon 3.3K ohm ±5% ¼W	4
				714,819			
				R814,719		Carbon 3.3K ohm ±5% ¼W	4
				727,827			
				R715,815		Carbon 22K ohm ±5% ¼W	2
				R716		Carbon 4.7K ohm ±5% ¼W	1

PARTS LIST

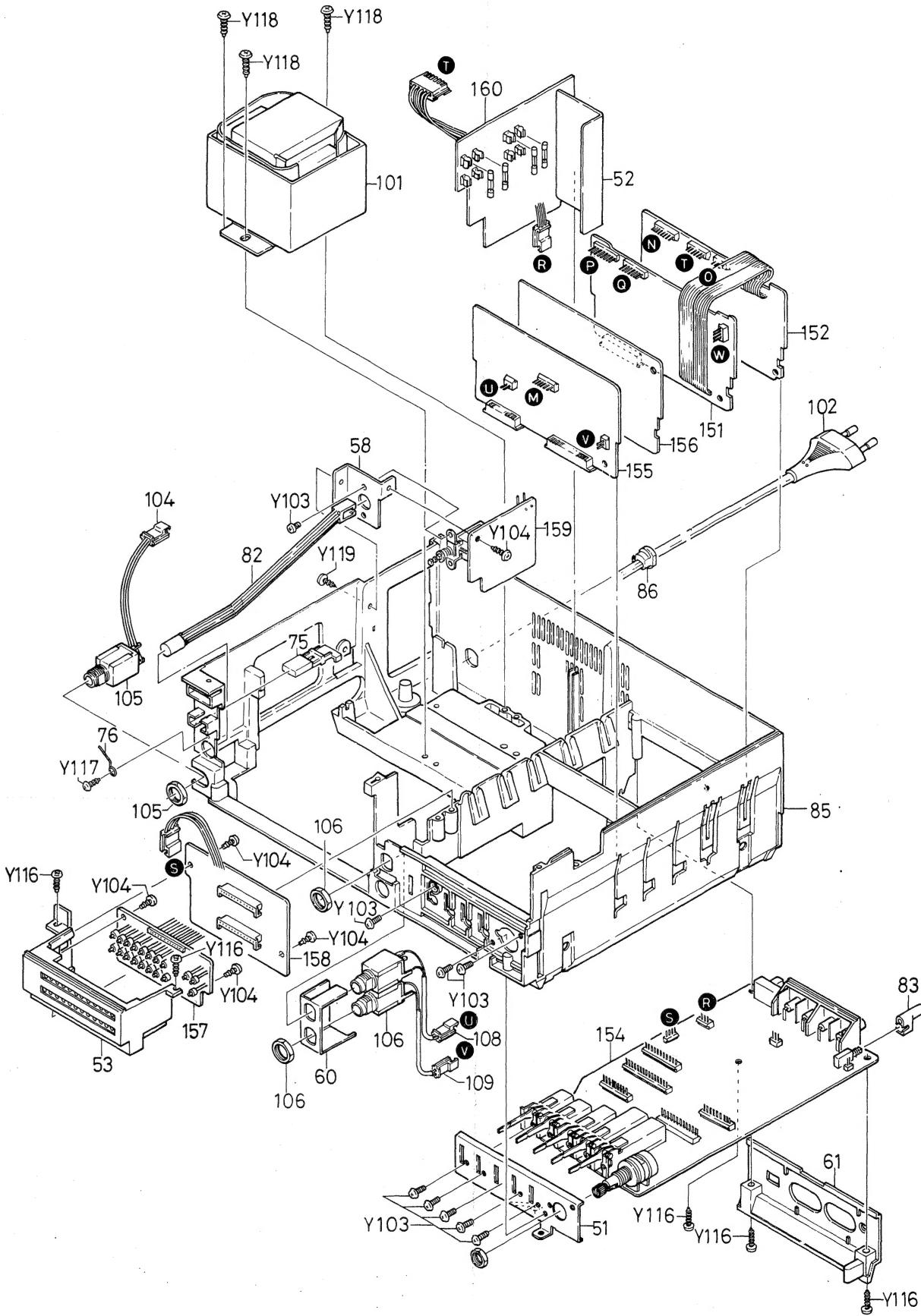
Key No.	Part No.	Description	Q'ty
PRE MIC PCB ASS'Y			
	RESISTORS		
R816		Carbon 4.7K ohm ±5% ¼W	1
R817,818		Carbon 2.2K ohm ±5% ¼W	3
826			
R717,718		Carbon 2.2K ohm ±5% ¼W	3
726			
R720,940		Carbon 10K ohm ±5% ¼W	2
R721		Carbon 220 ohm ±5% ¼W	1
R722		Carbon 220K ohm ±5% ¼W	1
R822		Carbon 220K ohm ±5% ¼W	1
R709,809		Carbon 5.6K ohm ±5% ¼W	2
R724		Carbon 1.8K ohm ±5% ¼W	1
R725		Carbon 150K ohm ±5% ¼W	1
R934,936		Carbon 6.8K ohm ±5% ¼W	2
R937,938		Carbon 330 ohm ±5% ¼W	2
DOLBY PCB ASS'Y			
156	141-4-233T-60201	P.C. Board Ass'y, Dolby	1
	4-235T-38772	Socket 15P	1
	4-235T-38796	Socket 9P	1
L501,551	4-255T-01671	MX Coil	2
SVR501	4-222T-85875) or Semi Variable	
702,802	4-222T-81575	Resistor 10K	3
IC501		IC HA11226	1
Q708,808		Transistor 2SC536 Aud	2
Q707,807		Transistor 2SD1012	2
D501,551		Diode DS442X	2
D502,552		Diode 1N34A	2
	CAPACITORS		
C503,553		AL Electrolytic 0.33µF 16V	4
506,556		+40-20%	
C507,557		AL Electrolytic 0.1µF 16V	4
510,560		+40-20%	
C737,832		AL Electrolytic 1µF 16V	2
		+40-20%	
C918		Electrolytic 330µF 16V	1
C925		Electrolytic 100µF 25V	1
C916		Electrolytic 47µF 16V	1
C501,551		Electrolytic 4.7µF 25V	2
C508,558		Electrolytic 10µF 16V	5
509,559			
513			
C511,512		Electrolytic 4.7µF 25V	6
561,562			
719,819			
C726,826		Electrolytic 1µF 25V	2
C727,827		Ceramic 470pF 50V ±10%	2
C502,552		BC Con 0.0047µF 25V ±5%	2
C504,554		BC Con 0.015µF 25V ±5%	4
505,555			
	RESISTORS		
R501,551		Carbon 6.8K ohm ±5% ¼W	2
R552		Carbon 1M ohm ±5% ¼W	1
R502		Carbon 1M ohm ±5% ¼W	1
R503,553		Carbon 47K ohm ±5% ¼W	2
R504,554		Carbon 180 ohm ±5% ¼W	2
R505,555		Carbon 3.9K ohm ±5% ¼W	2
R506,556		Carbon 270K ohm ±5% ¼W	4
508,558			
R507,557		Carbon 12K ohm ±5% ¼W	2
R739,839		Carbon 1.8K ohm ±5% ¼W	4
780,880			
R745,845		Carbon 150K ohm ±5% ¼W	2
R746,846		Carbon 15K ohm ±5% ¼W	2
R748,848		Carbon 1.5K ohm ±5% ¼W	2
R747,847		Carbon 18K ohm ±5% ¼W	2
R933		Carbon 330 ohm ±5% ¼W	1
R939		Carbon 1.5K ohm ±5% ¼W	1

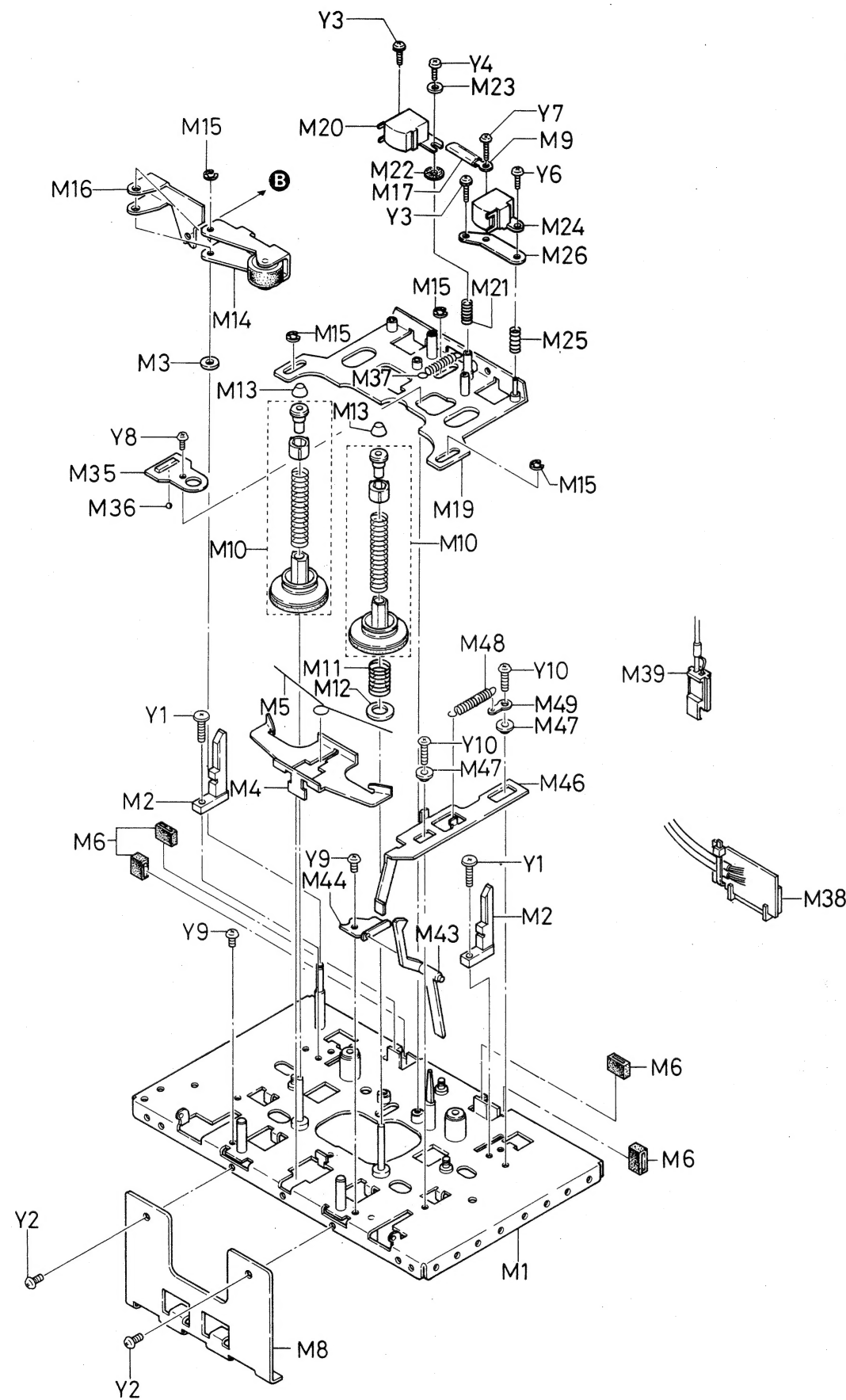
Key No.	Part No.	Description	Q'ty
LED METER PCB ASS'Y			
157	141-4-233T-77000	P.C. Board Ass'y, LED Meter	1
	4-236T-16978	Plug 11P	1
	4-236T-16979	Plug 12P	1
		LED SLP144B Display Level	6
		Meters, Red	
		LED SLP244B Display Level	16
		Meters, Green	
R764,864		Carbon Res. 220 ohm ±5% ¼W	6
765,865			
766,866			
LED IC PCB ASS'Y			
158	141-4-233T-77100	P.C. Board Ass'y, LED IC	1
IC702,802		IC BA682A DIP18	2
	4-235T-70098	Socket 11P	1
	4-235T-70099	Socket 12P	1
	4-235T-93200	Socket	1
SVR704	4-222T-81571) or Semifixed Variable	2
804	4-222T-85871	Resistor 500 ohm	
SV703	4-222T-81575) or Semifixed Variable	2
803	4-222T-85875	Resistor 10K ohm	
	RESISTORS		
R763,863		Carbon 220K ohm ±5% ¼W	2
R761,861		Carbon 10K ohm ±5% ¼W	4
762,862			
R760,860		Carbon 27K ohm ±5% ¼W	2
	CAPACITORS		
C728,828		Electrolytic 2.2µF 25V	2
C729,829		Electrolytic 22µF 16V	2
AC SWITCH PCB ASS'Y			
159	141-4-233T-60501	P.C. Board Ass'y, AC Switch	1
	4-238T-01373	Power Switch	1
	4-236T-13471	Plug 2P	1
C951	4-223T-11700	Capacitor 0.01µF 250V	1
POWER SUPPLY PCB ASS'Y			
160	141-4-233T-60600	P.C. Board Ass'y, Power Supply	1
	141-2-327T-18200	Insulator	3
	4-236T-13475	Plug	1
	141-2-381T-04200	Bracket, Fuse	8
	141-2-243T-09800	Base	3
	4-235T-92700	Socket	1
	4-235T-92800	Socket	1
	4-234T-03671	Fuse 2A	1
	4-234T-04471	Fuse 1A	1
	4-234T-01971	Fuse 800mA	1
	4-234T-02171	Fuse 630mA	1
Q901,902		Transistor 2SD880	3
904			
Q903		Transistor 2SC536	1
D901,902		Diode DS135E	6
903,904			
905,906			
D907,908		Diode DS135E	3
910			
D912		Zener Diode GZA13U	1
D911		Zener Diode GZA22U	1

PARTS LIST

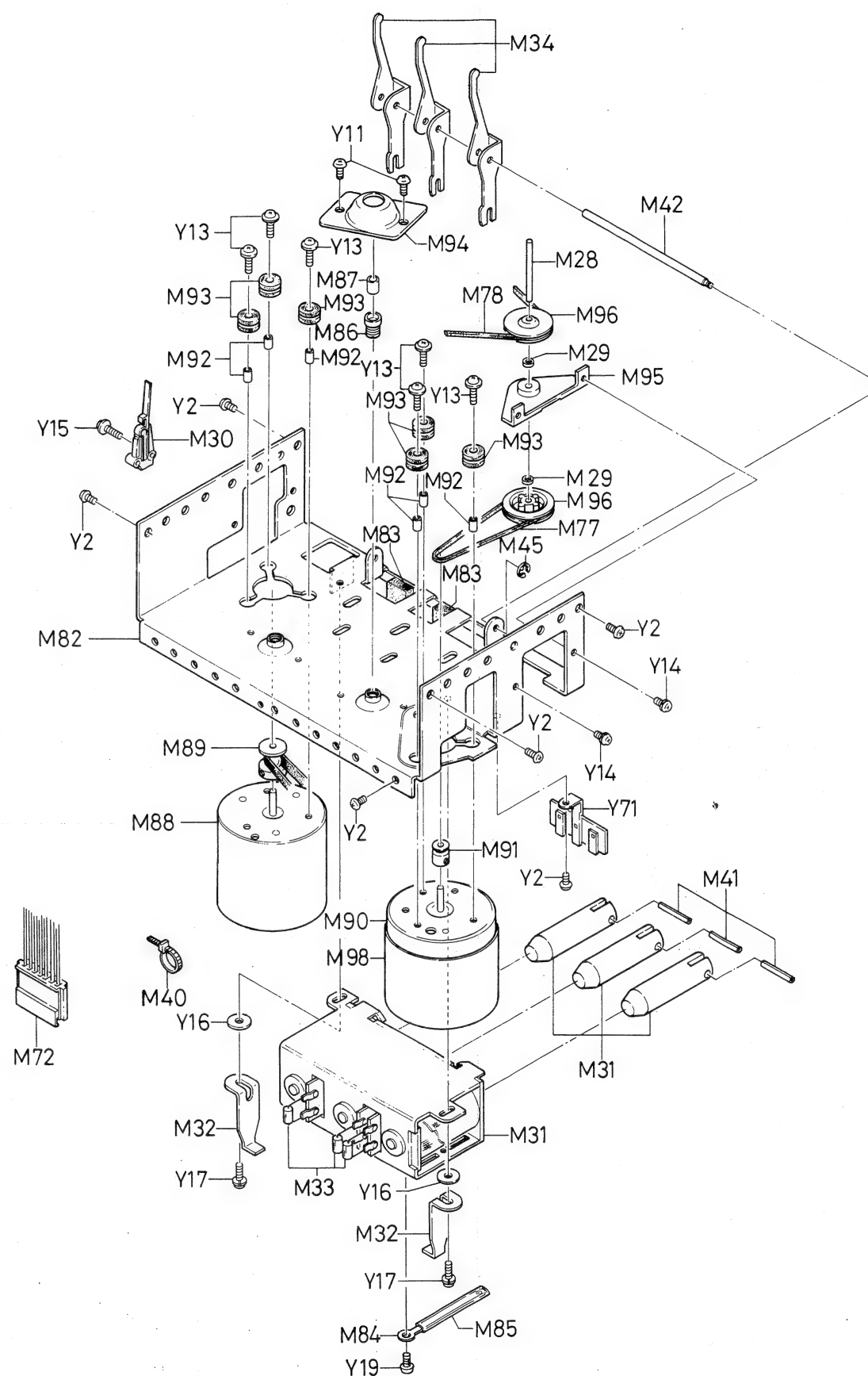
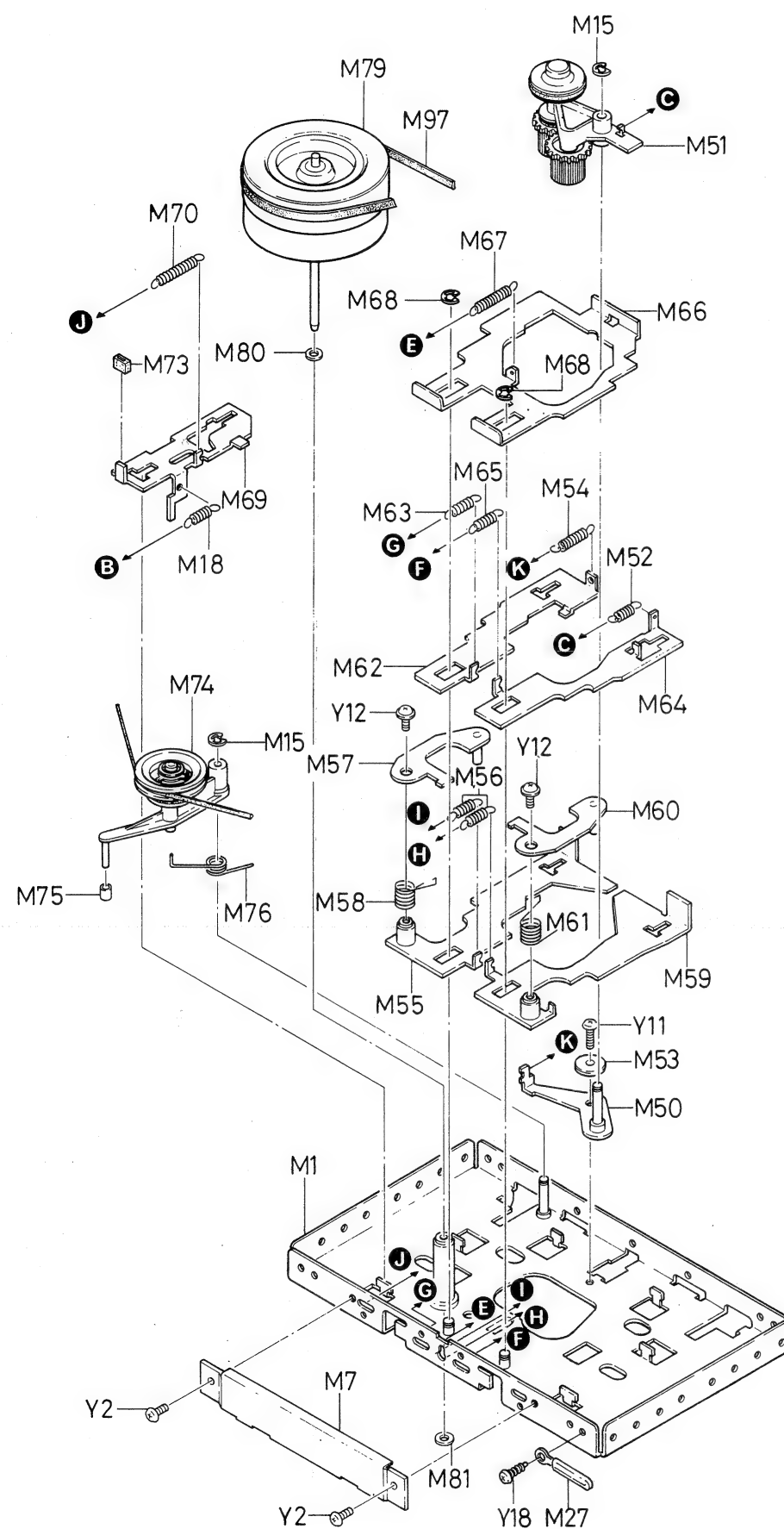
Key No.	Part No.	Description	Q'ty
POWER SUPPLY PCB ASS'Y			
CAPACITORS			
C901		Electrolytic 1000μF 50V	1
C905		Electrolytic 1000μF 35V	1
C908		Electrolytic 1000μF 25V	1
C902		Electrolytic 220μF 25V	1
C903,906		Electrolytic 330μ 25V	2
C907		Electrolytic 330μ 16V	1
C923		Ceramic 0.01μF 500V	1
RESISTORS			
R901		Solid 3.3K ohm ±10% ½W	1
R902		Carbon 4.7K ohm ±5% ¼W	1
R903		Carbon 10 ohm ±5% ¼W	1
R904		Carbon 1.8K ohm ±5% ¼W	1
R908		Carbon 3.9K ohm ±5% ¼W	1
R909,912		Carbon 47 ohm ±5% ¼W	2
R911		Carbon 2.2K ohm ±5% ¼W	1
R935		Carbon 820 ohm ±5% ¼W	1
R913		Metal 180 ohm ±5% 1W	1
R905,906		Metal 18 ohm ±5% 2W	2
R907		FP-Carbon 4.7 ohm ±5% ½W	1
R910		FP-Carbon 10 ohm ±5% ¼W	1
AUTO STOP PCB ASS'Y			
161	141-4-233T-67400	P.C. Board Ass'y, Auto Stop	1
CN404	4-235T-95500	Magneto Sensor DM101A Socket	1
SOCKET PCB ASS'Y			
162	141-4-233T-67500	P.C. Board Ass'y, Socket	1
	4-235T-93100	Socket	1

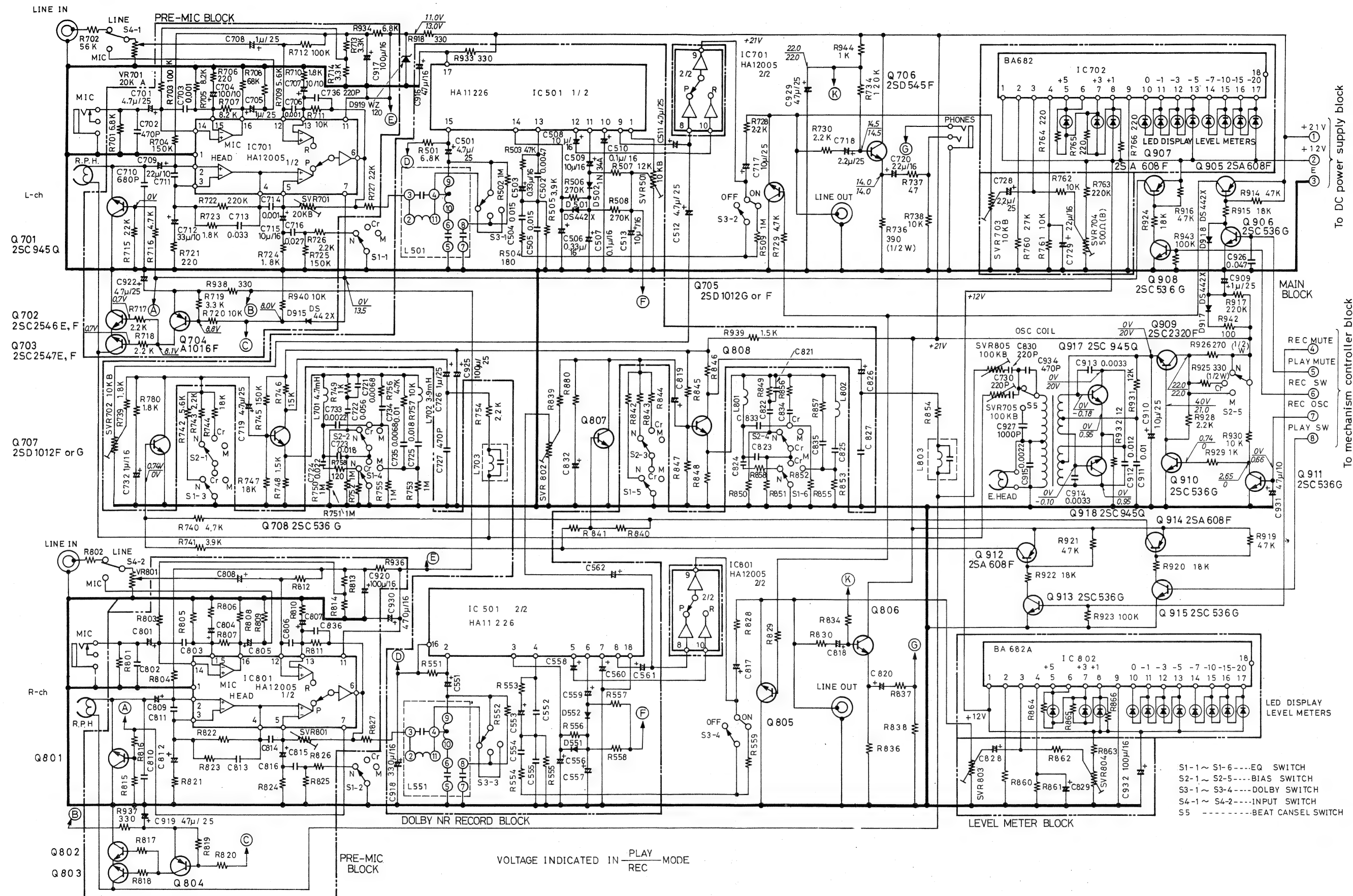
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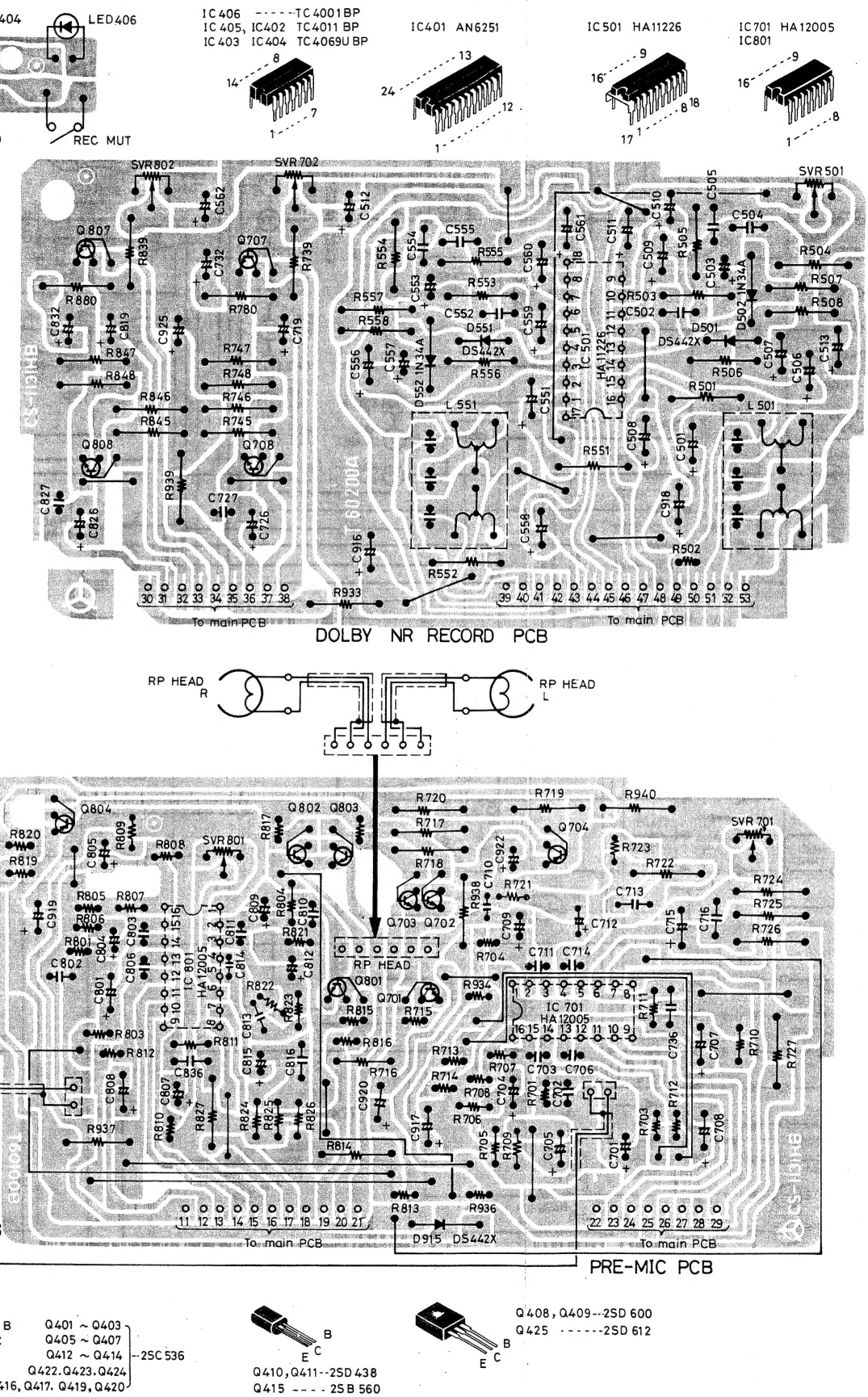
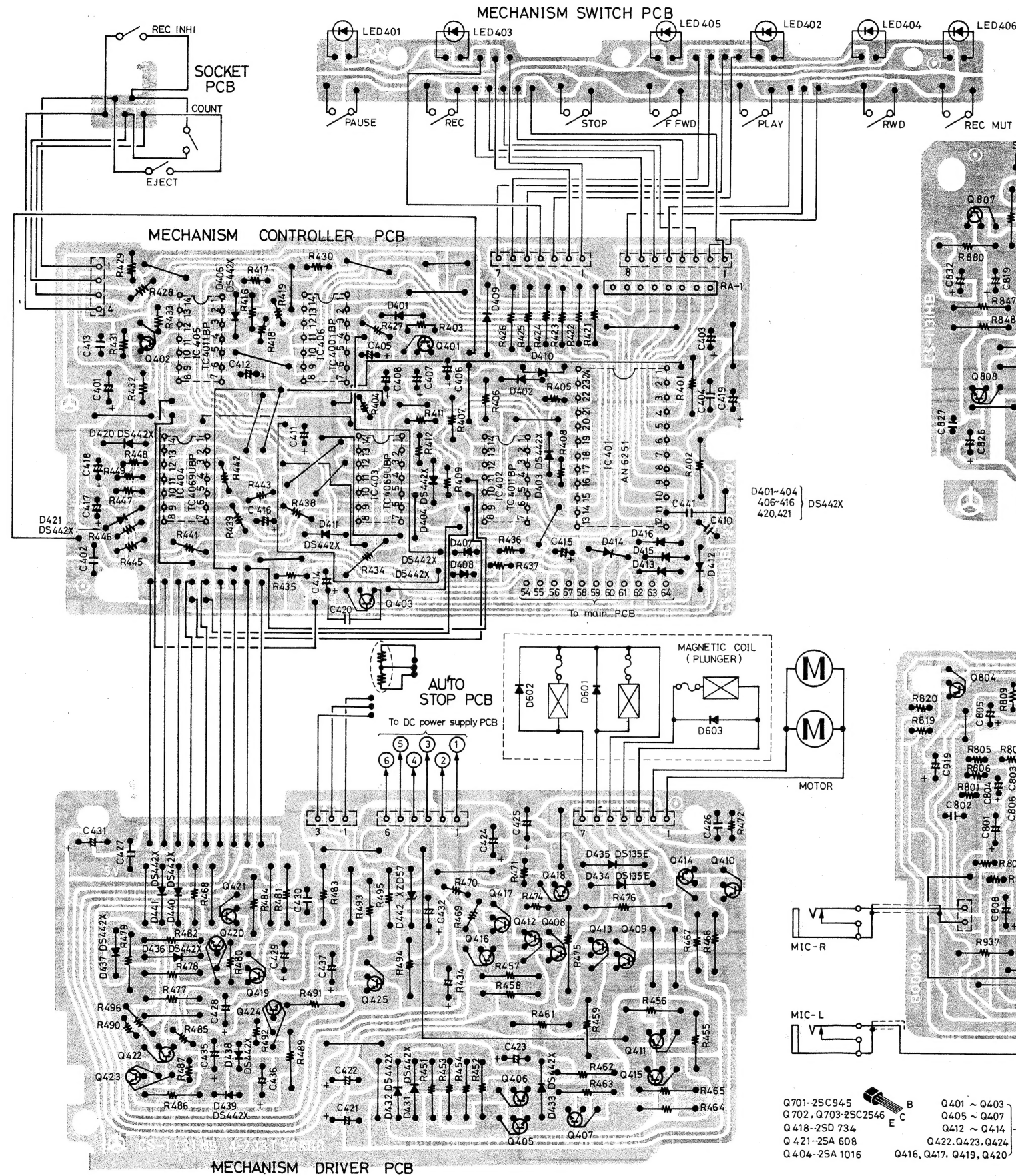


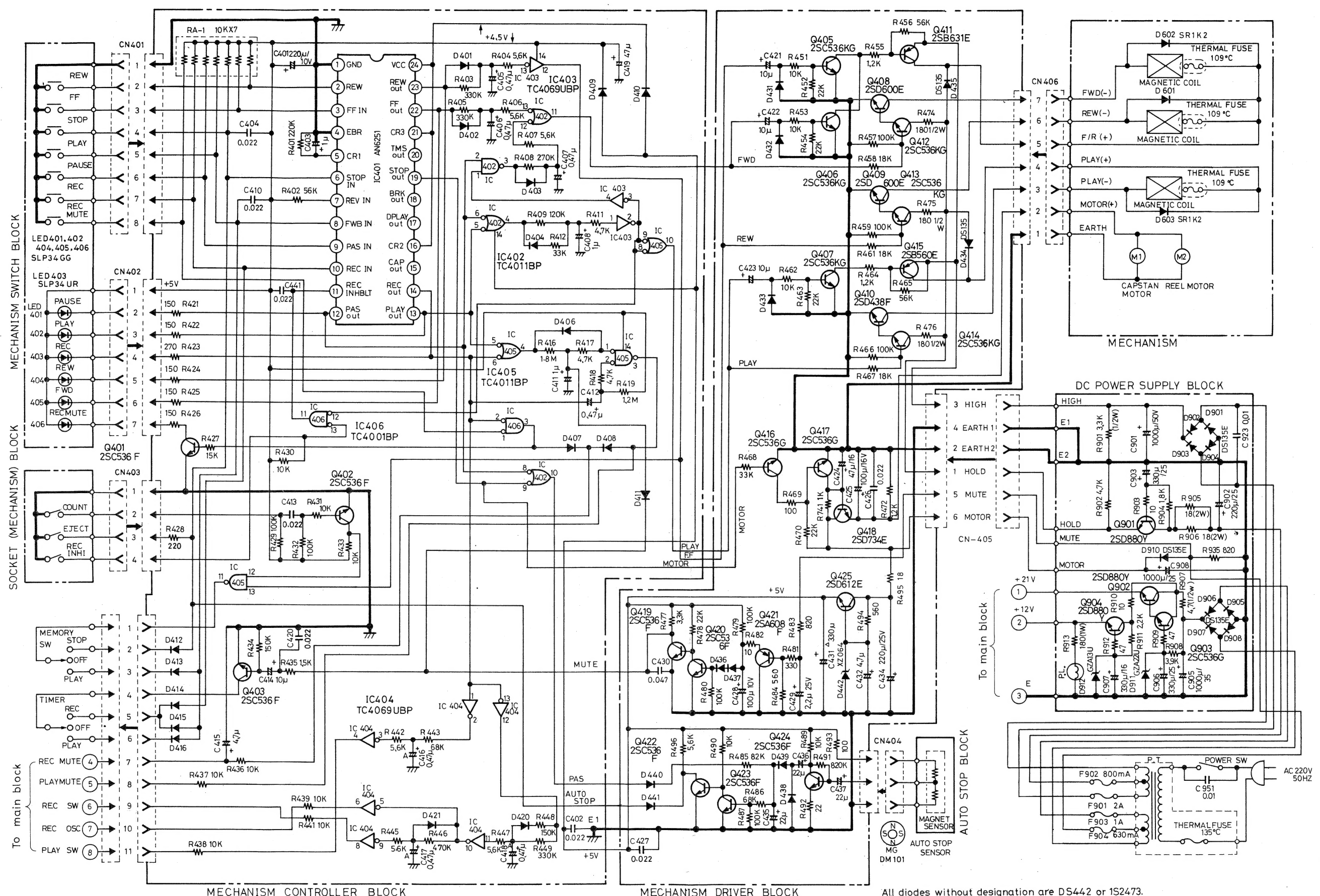


Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
MECHANISM (TM D20/UM)				MECHANISM (TM D20/UM)			
M1	141-0-311T-35001	Chassis Assembly	1	M73	141-2-445T-24200	Rubber Cushion	1
M2	141-2-464T-35700	Fixer, Cassette Guide (Front)	2	M74	141-0-742T-52900	Lever Assembly, FWD Take-up	1
M3	141-2-453T-30301	Washer	1	M75	141-2-461T-38300	Pipe	1
M4	141-2-731T-82300	Slide, Brake	1	M76	141-2-852T-64300	Spring Wire	1
M5	141-2-852T-63900	Spring Wire	1	M77	141-2-564T-23100	Square Belt	1
M6	141-2-445T-24200	Rubber Cushion	4	M78	141-2-564T-23600	Square Belt	1
M7	141-2-315T-22200	Reinforcement, Lower Part of Chassis	1	M79	141-0-521T-11600	Flywheel Assembly	1
M8	141-2-315T-22300	Reinforcement, Upper part of Chassis	1	M80	141-2-453T-30201	Washer	1
M9	141-2-472T-08800	Lug	1	M81	141-2-457T-35200	Special Washer	1
M10	141-0-531T-13211	Reel Plate Assembly, Take-up & Supply	2	M82	141-2-312T-17900	Sub Chassis Mechanism Rear Part	1
M11	141-2-855T-58200	Spring Coil	1	M83	141-2-447T-43100	Cushion, 6x10x6mm	3
M12	141-2-453T-30800	Washer, 6.2x9.5x0.13mm	1	M84	141-2-472T-09900	Lug	1
M13	141-2-465T-18400	Stopper	2	M85	141-2-490T-08230	Tube	1
M14	141-0-545T-06901	Lever Pinch Roller Assembly	1	M86	141-2-573T-12800	Bearing, Flywheel Thrust	1
M15	141-2-457T-25100	Special Washer	6	M87	141-2-683T-38700	Ring, Bearing Support	1
M16	141-2-742T-52100	Lever, Pinch Roller	1	M88	4-527T-10372	Motor, Main	1
M17	141-2-490T-08230	Tube 30mm	1	M89	141-0-661T-76000	Motor Pulley Assembly	1
M18	141-2-855T-58300	Spring Coil, Pinch Roller Pressure	1	M90	4-527T-16500	Motor, Reel	1
M19	141-0-731T-84100	Slide Assembly, Head	1	M91	141-0-661T-75700	Motor Pulley Assembly	1
M20	4-242T-25300	Magnetic Head, REC/PLAY	1	M92	141-2-461T-38400	Pipe, Motor Mounting	6
M21	141-2-855T-58500	Spring Coil, REC/PLAY Head Azimuth	1	M93	141-2-445T-24500	Rubber Cushion, Motor Mounting	6
M22	141-2-445T-24600	Rubber Cushion	1	M94	141-2-557T-06900	Bracket Bearing	1
M23	141-2-457T-34800	Special Washer	1	M95	141-0-571T-18900	Bearing Axis	1
M24	4-242T-23372	Magnetic Head, BRASE	1	M96	141-2-661T-31500	Pulley	2
M25	141-2-855T-66000	Spring Coil, ERASE Head Azimuth	1	M97	141-2-561T-05100	Flat Belt	1
M26	141-2-375T-08100	Bracket Head, ERASE Head	1	M98	141-2-322T-27100	Shield Plate, Reel Motor	1
M27	123-2-472R-00601	Lug, Lead Wire Dressing	1	SCREWS & OTHERS			
M28	141-2-753T-92100	Shaft	1	Y1		Binding Head Screw 2.6x8mm	2
M29	141-2-453T-30100	Washer	2	Y2		Pan Head Screw (Self Tapping Type) 3x5mm	10
M30	4-238T-17600	Switch	1	Y3		Pan Head Screw with Spring Washer 2x5mm	2
M31	4-264T-09371	Magnetic Coil	1	Y4		Binding Head Screw (Small Lead Angle) 2x5mm	1
M32	141-2-465T-18500	Stopper	2	Y5		***	
M33		Diode SR1K2, D601~603	3	Y6		Binding Head Screw (Small Lead Angle) 2x7mm	1
M34	141-2-742T-53100	Lever, Solenoid Lever	3	Y7		Binding Head Screw 2x6mm	1
M35	141-2-853T-68000	Spring Plate	1	Y8		Binding Head Screw 2x3mm	1
M36	141-2-345T-00400	Steel Ball	1	Y9		Pan Head Screw (Self Tapping Type) 2.6x6mm	2
M37	141-2-855T-58600	Spring Coil	1	Y10		Pan Head Screw 2.6x5mm	2
M38	140-4-233T-84500	P.C.B. Assembly, R/P Head	1	Y11		Pan Head Screw (Self Tapping Type) 2.6x5mm	3
M39	4-235T-95300	Socket, ERASE Head (2 pins)	1	Y12		Pan Head Screw with Washer 2.6x4mm	2
M40	141-2-464T-20671	Fixer, Lead Wire Dressing	1	Y13		Pan Head Screw with Washer 2.6x7mm	6
M41	141-2-488T-02800	Pin	3	Y14		Pan Head Screw with Spring Washer 2.6x5mm	2
M42	141-2-753T-92000	Shaft, Lever (M34)	1	Y15		Pan Head Screw with Washer 2x8mm	1
M43	141-2-742T-52400	Lever	1	Y16		Washer 3x8x0.5mm	2
M44	141-2-747T-20100	Bracket Lever	1	Y17		Pan Head Screw with Spring Washer 3x6mm	2
M45	141-2-457T-23000	Special Washer	1	Y18		Pan Head Tapping Screw 3x8mm	1
M46	141-2-731T-82600	Slide, REC	1	Y19		Pan Head Screw, 3x4mm	1
M47	141-2-462T-62300	Boss	2				
M48	141-2-855T-58700	Spring Coil	1				
M49	141-2-472T-09800	Lug	1				
M50	141-0-742T-52800	Lever Assembly, REW/F.FWD Lever	1				
M51	141-0-742T-52710	Lever Assembly, REW/F.FWD Roller	1				
M52	141-2-855T-59700	Spring Coil, REW/F.FWD Roller	1				
M53	141-2-462T-62700	Boss, REW/F.FWD Lever	1				
M54	141-2-855T-59800	Spring Coil, REW/F.FWD Lever	1				
M55	141-0-731T-83000	Slide Assembly, Drive Arm	1				
M56	141-2-855T-59400	Spring Coil	2				
M57	141-0-742T-52500	Lever Assembly, Link Lever	1				
M58	141-2-852T-64100	Spring Wire	1				
M59	141-0-731T-83100	Slide Assembly, Drive Arm	1				
M60	141-0-742T-52501	Lever Assembly, Link Lever	1				
M61	141-2-852T-64200	Spring Wire	1				
M62	141-2-731T-82800	Slide, F.FWD Arm	1				
M63	141-2-855T-59200	Spring Coil	1				
M64	141-2-731T-82900	Slide, REW Arm	1				
M65	141-2-855T-59300	Spring Coil	1				
M66	141-0-731T-82700	Slide Assembly	1				
M67	141-2-855T-58800	Spring Coil	1				
M68	141-2-457T-23100	Special Washer	2				
M69	141-2-731T-83200	Slide, FWD Take-up	1				
M70	141-2-855T-59900	Spring Coil	1				
M71	4-237T-09200	Terminal Board	1				
M72	4-235T-82500	Socket, Motor Solenoid (7pins)	1				

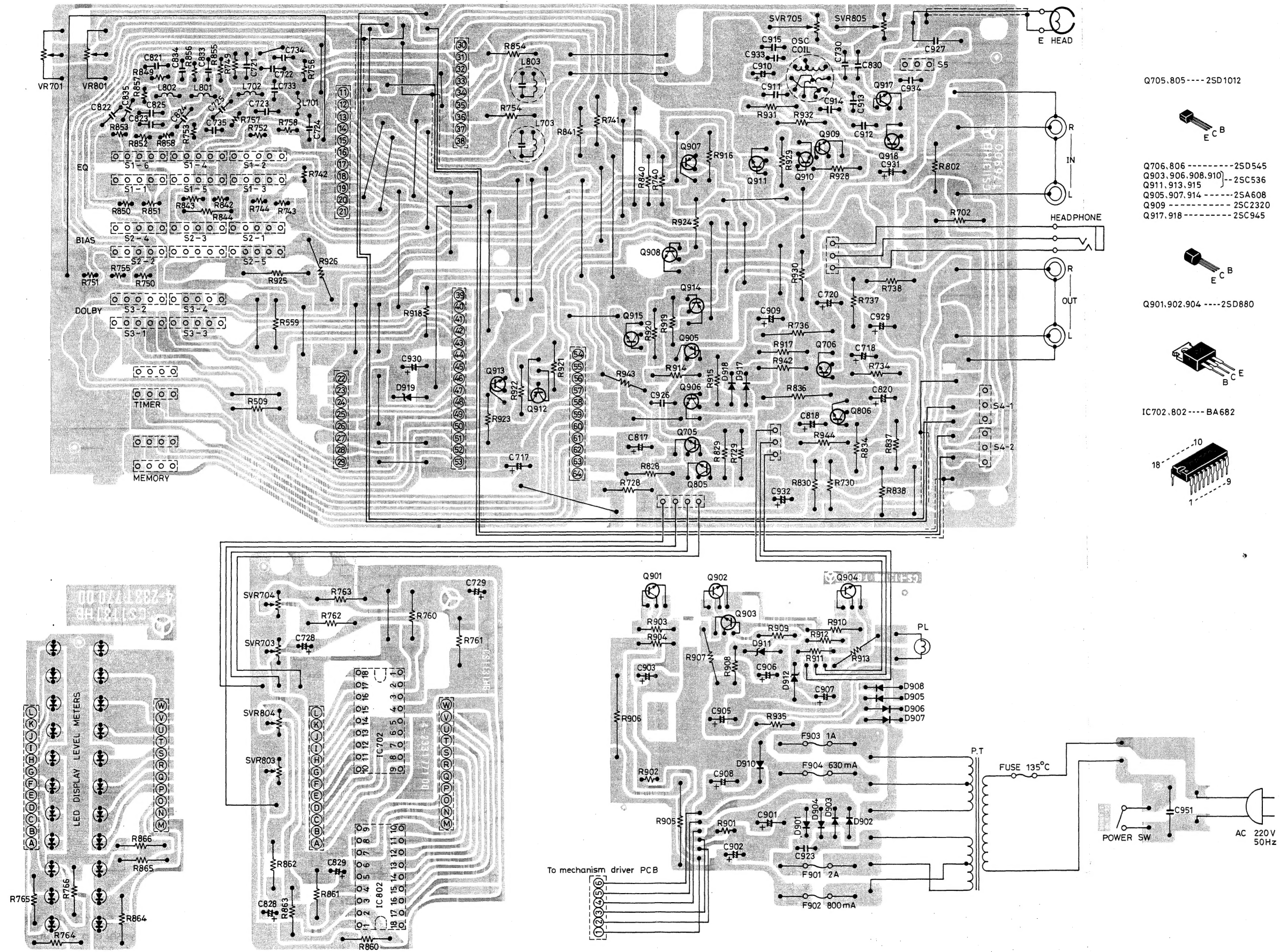




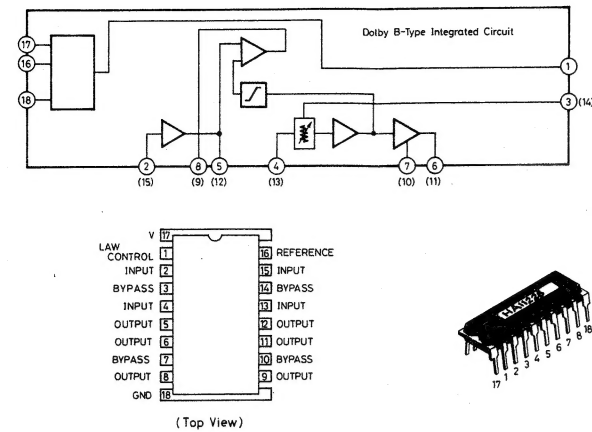




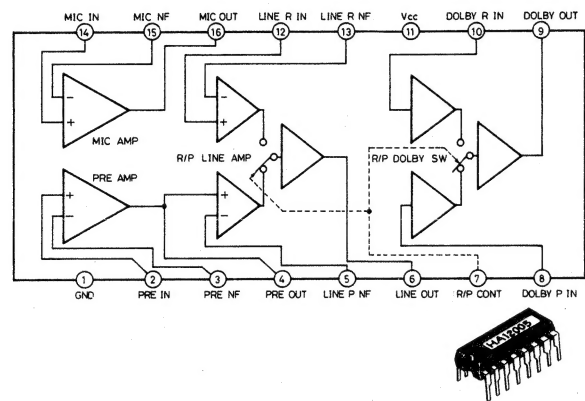
All diodes without designation are DS442 or 1S2473.



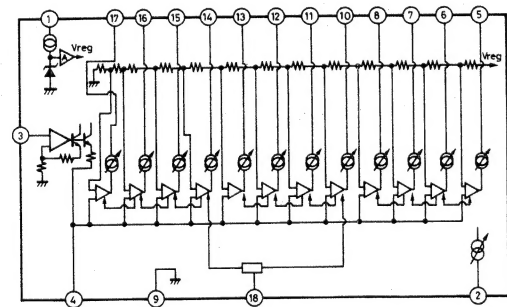
HA11226 (DOLBY B TYPE NOISE REDUCTION SYSTEM)



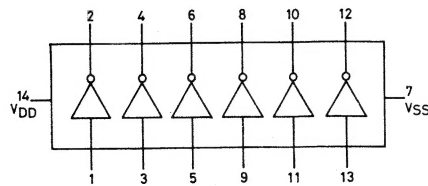
HA12005 (Low Noise Amplifier & Electronics Switching)



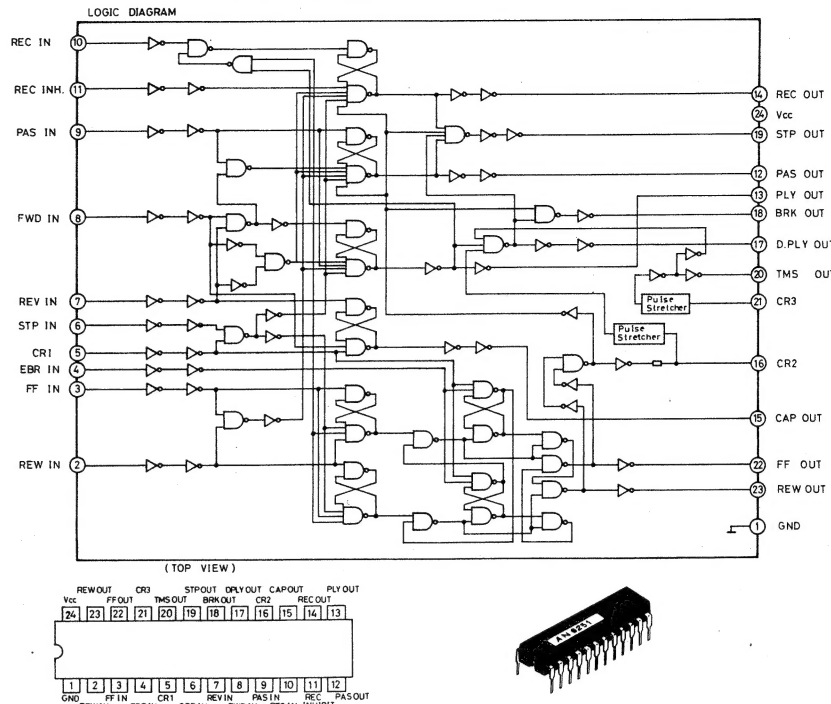
BA682(LED LEVEL METER DRIVER)



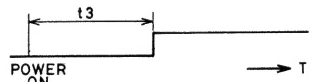
TC4069UBP



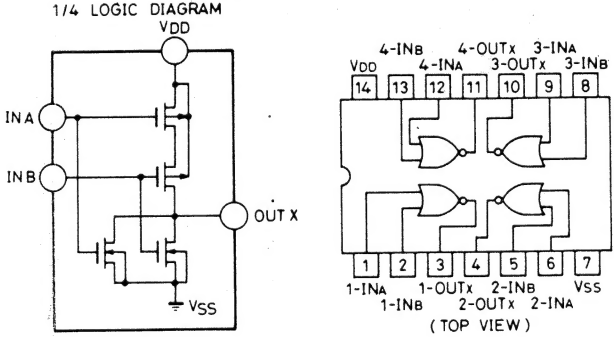
AN6251(GN OPERATION CONTROLLER)



— STOP OUT:
When any one of FF OUT, REW OUT, PAS(PAUSE) OUT
REC OUT is at "L" level, STOP OUT is at "H" level.
— Timer start timing (CR3, pin 21)
In t3 (sec) time after turning on power, TMS OUT
becomes "H" level. If FWD/REV IN is set to "L" within
this t3 duration, PLY OUT is set to "L" level.



TC4001 (QUAD 2-INPUT POSITIVE NOR GATE)

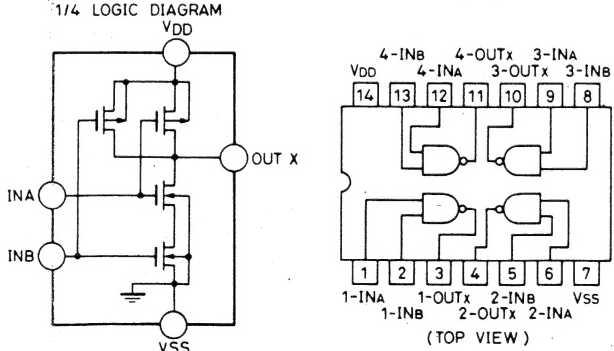


TRUTH VALUE TABLE

INPUT	OUTPUT
A B	X
L L	H
L H	L
H L	L
H H	L



TC4011 (QUAD 2-INPUT POSITIVE NAND GATE)



TRUTH VALUE TABLE

INPUT	OUTPUT
A B	X
L L	H
L H	H
H L	H
H H	L



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